

Kinematic ranges for F_L measurements

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We are following the trend started by H1.

They bin their data in Q^2 and y to work at the same value of x for all beam (p,A) energies.

The binning in y is defined at the lowest hadron momentum.

At a fixed value of Q^2 , and for each p or A beam momentum, the corresponding values of y scale by the ratio of beam energies:

$$y_2 = y_1(E_1/E_2)$$

1.0, 0.631, 0.398, 0.251, 0.158, 0.1, 0.063, 0.0398, 0.0251, 0.0158, 0.01, 0.0063, 0.00398, 0.0025, 0.00158, 0.001, 0.000631, 0.000398, 0.00025, 0.000158, 0.0001
0.667, 0.421, 0.265, 0.167, 0.1056, 0.0667, 0.0421, 0.0265, 0.0167, 0.01056, 0.00667, 0.00421, 0.00265, 0.0017, 0.00105, 0.00067, 0.000421, 0.000265, 0.00017, 0.000106, 0.000067

The second row has the y values for $p_1 = 50$ and $p_2 = 75$ GeV/c

For each combination of three energies I calculate the average y in all bins and then produce values y^2/Y^+ which are the ordinates for the fits that would eventually produce the values of F_1 and F_2 .

The following displays are filled repeating the operation for all average values of Q^2 .

The triads associated to each x value should satisfy the condition: “lever arm” > 0.1

lever arm is the “distance” between the two outer values of y^2/Y^+ .

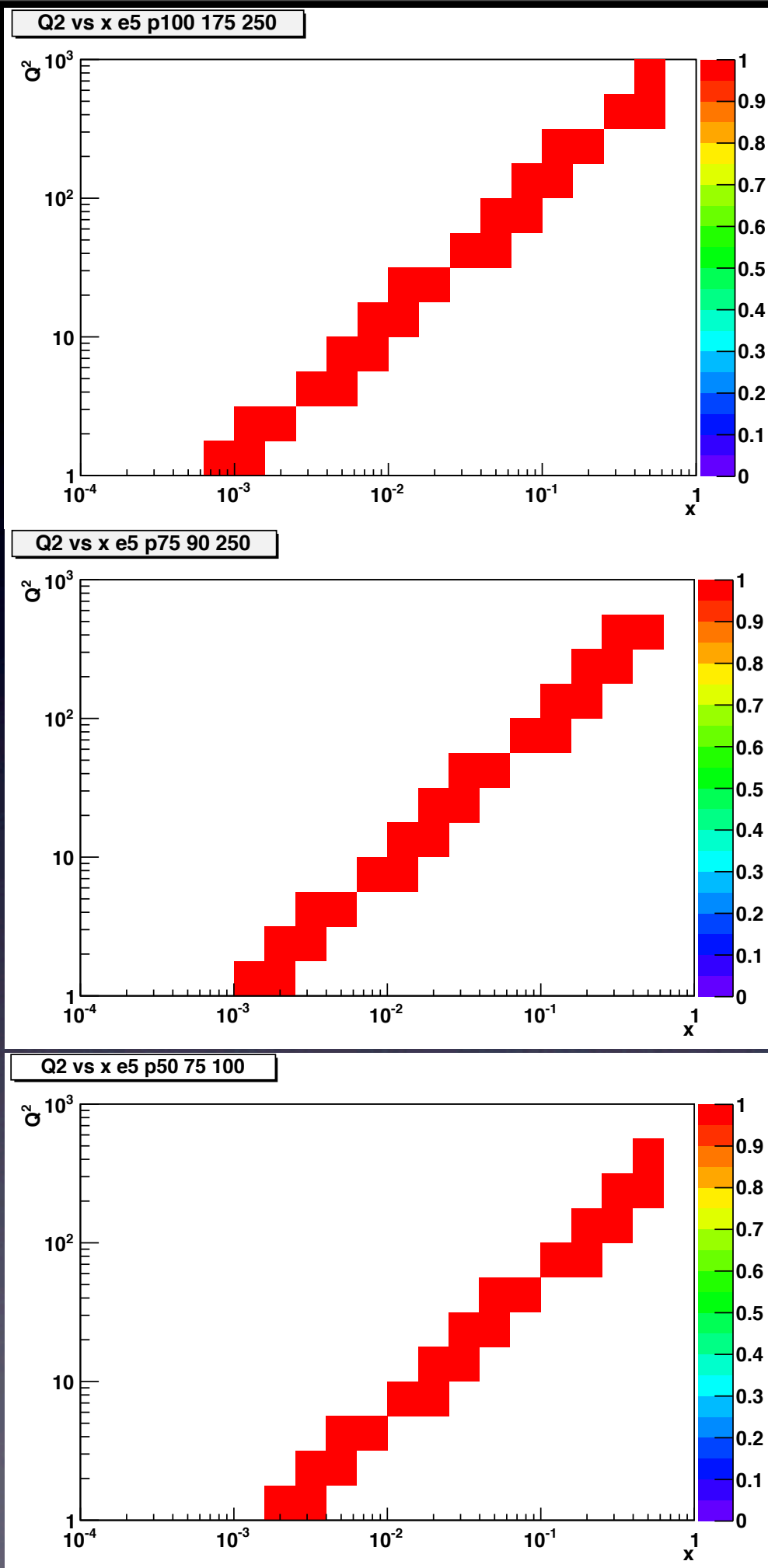
Electron E=5 GeV

p energies 100 175 250

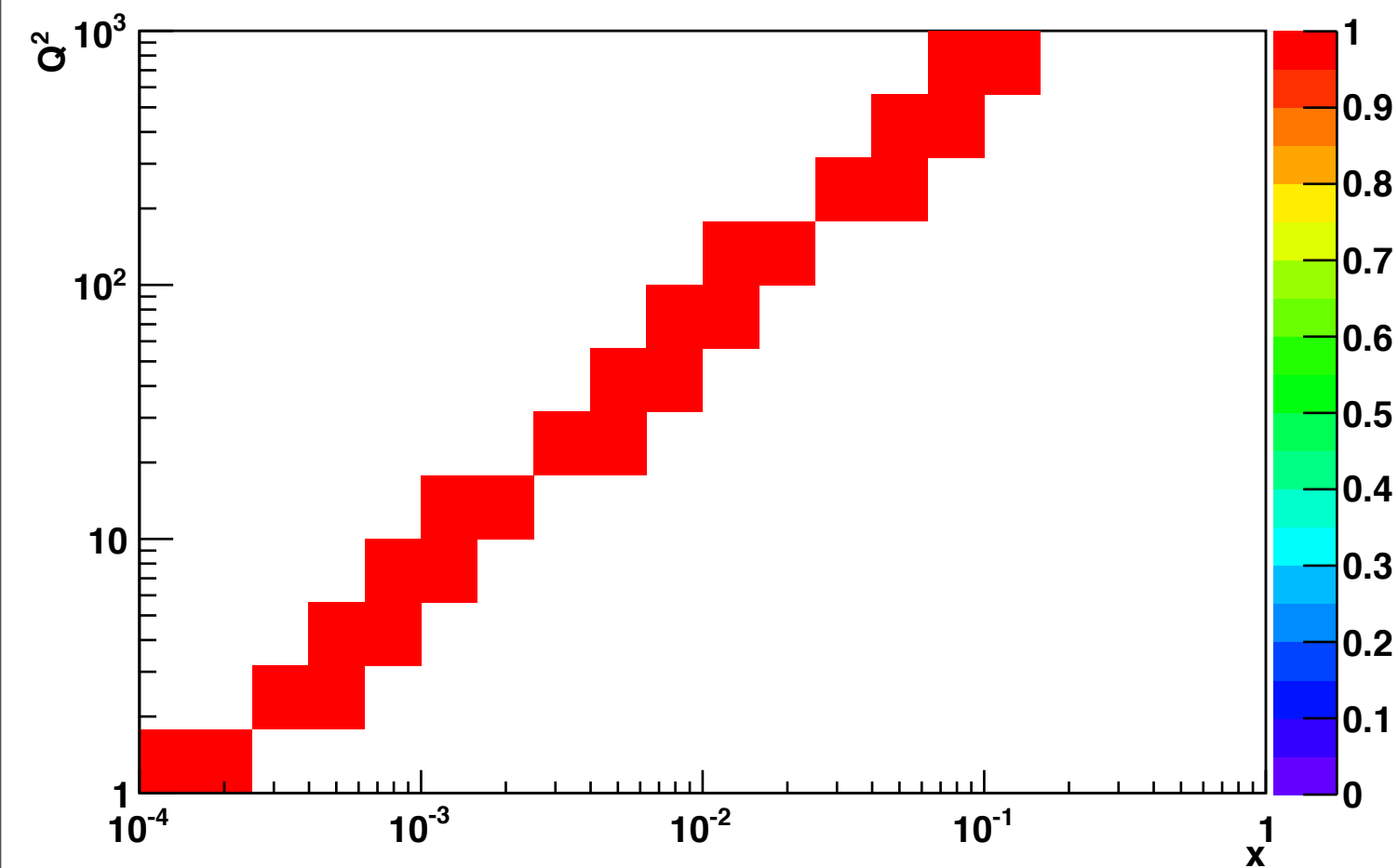
One can reach lower values of x using higher momentum hadron beams.

p energies 75 90 250

A energies 50 75 100



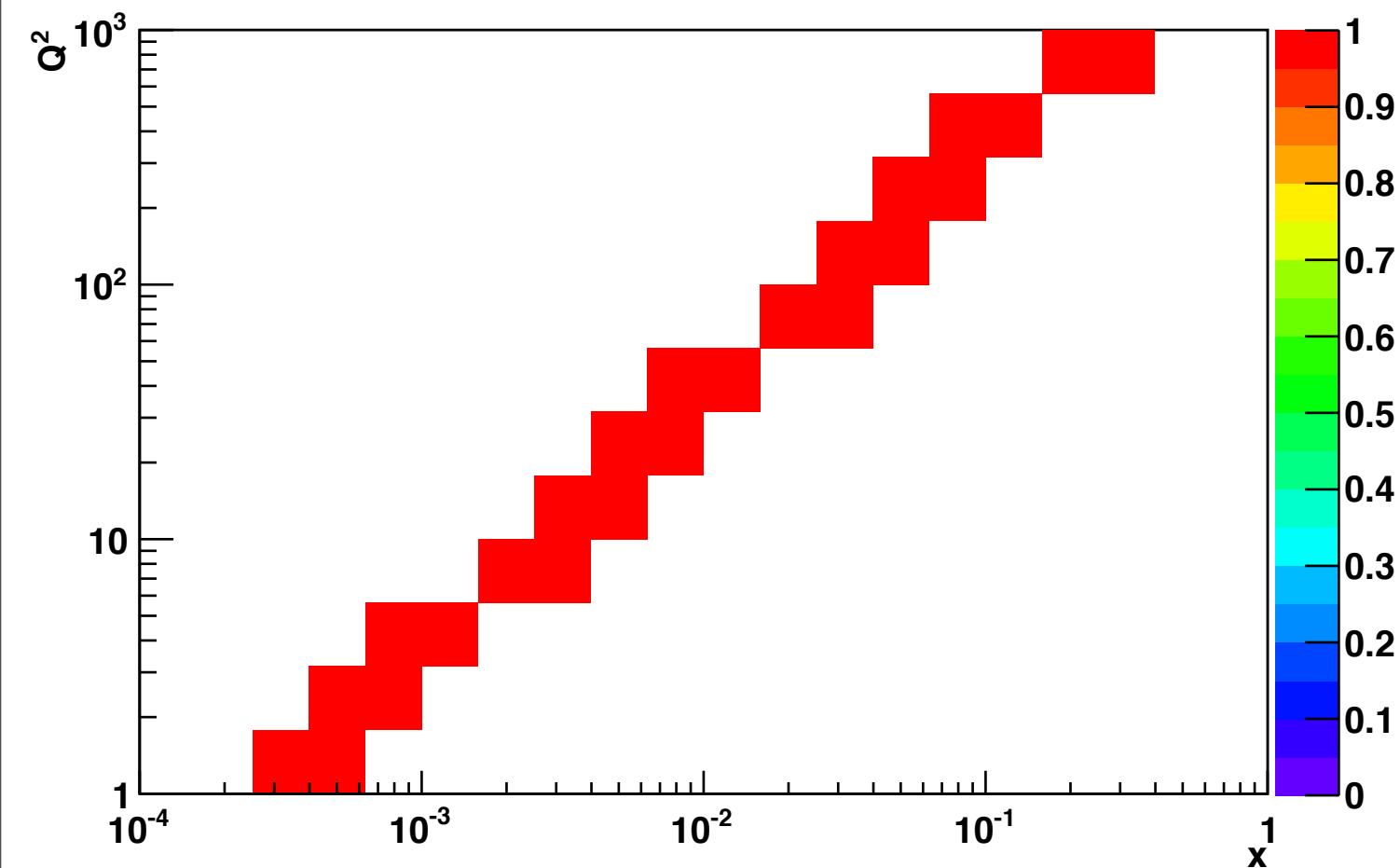
Q2 vs x e30 p100 175 250



electron $E=30$ GeV

p energies 100 175 250

Q2 vs x e30 p50 75 100



p(A) energies 50 75 100